Individual Difference Theory and Research: Application to Multinational Coalition Teamwork

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ABSTRACT

A guiding principle of the work of this panel on multinational coalitions is an acknowledgement of the multitude of factors that can affect teamwork under such challenging conditions. Individual differences in cognitive processing is one such factor that the panel has cited as relevant to effective operations of teams in general, and multinational teams, more specifically. The current talk will provide an overview of individual difference factors that could be investigated to facilitate adaptability in teamwork within multinational coalitions. I begin by briefly discussing individual differences in general and then specify several constructs that may play a role in teamwork. The talk will also review the extant experimental literature. The talk will conclude with my suggestions for future research concerning individual differences that might be relevant to adaptability in coalition teamwork.

1.0 INTRODUCTION

"Politically fragile in nature, [coalitions] develop out of necessity, sometimes uniting nations without a history of harmonious relations." (1. Scales, 1998, p.4). Although often formed in response to some significant instigating event (2. Bechtold, 1995), coalitions have the most limited commonality and life spans of all international alliances. They enable the undertaking of missions that would overwhelm the resources of a single nation (3. Silkett, 1993) and, perhaps even more importantly, establish the international legitimacy of a mission (4. Forster, 2000). However, they often have "broad and often unclear mandates and are the result of hasty prior coordination …" (4. Forster, 2000, p. 56). Indeed, in many ways, coalitions might be seen as the ultimate adhoc team: the challenges to their effective development and maintenance are greater, the risks that fostered their creations are often more immediate and urgent, and the costs of failure graver (physical devastation, loss of life and in terms of shaping history) than those incurred in virtually any other teamwork forum. Given their vital importance, it is critical to identify and leverage the factors that might affect the performance and effectiveness of coalition teamwork.

There are a multitude of factors that can conspire to test the coordination, cohesion, and ultimately the effectiveness of a coalition. Significant differences can arise due to incompatibility of political ideology, strategic goals, operational processes, tactical implementation, and a lack of interoperability of equipment 4. Forster, 2000; 1. Scales, 1998; 3. Silkett, 1993). As important as these differences are, other factors at play can facilitate or interfere with effective teamwork at the purely human level. Indeed, this symposium is devoted to an in-depth discussion of the human face of coalition teamwork. This paper will address perhaps the most basic level of these human factors, addressing some of the individual differences on cognitive, emotional, and social levels that past research has shown affect team work and processes in general. More colloquially, this paper begins to answer the question: "What aspects of a person's thinking, feeling and interacting should we study, how should we measure these aspects, who should we study, and what are some of the additional factors that we should keep in mind when thinking about how the personalities of individual members might affect team performance in general and multinational coalitions more specifically?". I begin be defining some key concepts and discussing the selection of the specific individual difference measures reviewed below.

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1.1 Teams

Teams are defined, and distinguished from simple groups of people, as being two or more individuals who have specific tasks, yet who work interdependently toward a common, valued goal for a (usually) time-limited period of time ([5] Swezey & Salas, 1992; [6] Zaccaro, Rittman, & Marks, 2001). Particularly relevant to the topic of this symposium, some researchers in the area have also explicitly defined teams in terms of their dynamic and adaptive interaction (e.g., [7] Salas, Dickinson, Converse, & Tannenbaum, 1992, see also [6] Zaccaro et al., 2001). Although some of the research I will review did not always require the highest level of interdependence, all involved attempting to achieve a shared goal, and I believe the construct of team fits the spirit of this symposium. So I will generally if not exclusively refer to 'team personality composition and team outcomes', although the term 'group personality composition' is used most often in the literature.

Although diversity within teams can lead to greater conflict, miscommunication and process loss ([7; 8] Steiner, 1972; 1976), it also holds great promise. Heterogeneous teams offer the possibility of more effective performance through "… a more diverse pool of knowledge and skills, values, and experiences that can be brought to bear on a team's task" ([9] Jentsch, Hoeft, Fiore, & Bowers, 2004, p. 318). And indeed research suggests heterogeneity can improve team performance, at least under certain circumstances and given an appropriate times frame (e.g., [10; Cox, Lobel & McLeod, 1991; 11] Watson, Johnson, & Zgourides, 2002).

1.2 Adaptability

This symposium is focused not only on performance, but on adaptability. Adaptability has been conceptualized as multidimensional, involving flexibility in response to changing circumstances [12] LePine, Colquitt & Erez, 2000). Recently adaptability has been defined in terms of the physical, uncertainty, learning, creativity, interpersonal, cultural, crisis, and work stress-related dimensions associated with certain people (e.g., [13] Ployhart & Bliese, 2006) or with certain jobs (e.g., [14] Pulakos, Arad, Donovan, & Plamondon, 2000). Relevant to the multinational context, research has shown that the abilities of sojourners (e.g., Peace Corps volunteers, workers in multinational companies, foreign students) to adapt to new cultures is positively related to traits such as persistence, flexibility, maturity, self-confidence, self-esteem, energy, principled responsibility, and optimistic realism and negatively related to perfectionism, rigidity, dogmatism, and ethnocentrism (see [15; 16] Hannigan, 1990; see also Ward & Kennedy, 1994).

There is no doubt that the notion of adaptability is central to a great deal of military tasks in general and to coalition work in particular. For instance, as stated in *Staff Organization and Operations of the [U. S.] Army* "The coalition commander and staff face unique situations that involve "uncertainties, incomplete or questionable data, and several possible alternatives" (FM101-5, Headquarters, Department of the Army, May 1994, p. 5-1, cited in [2] Bechtold, 1995). Sutton and colleagues ([17] Sutton, Pierce, Burke, & Salas, 2006) also make clear that the confluence of challenges will require high levels of individual and team adaptability for the personnel who participate in modern military coalitions. Although there is not a great deal of psychological research on the individual difference-adaptability relation either at the individual or at the team level ([13] Ployhart & Bliese, 2006; [18] LePine 2003), I will refer to the evidence that does exist throughout the paper.

1.3 Individual Differences

Finally, individual differences are psychological traits or chronic tendencies that "convey a sense of consistency, internal causality and personal distinctiveness" ([19] Carver & Scheier, 2000, p. 5). Although the role of situations are acknowledged to play a role here (Robertson & Callinan, 1998), individual differences are considered to play an elemental role in how people generally react across the situations

they encounter (i.e., a main effect hypothesis). Alternatively, as Larsson (1989) has suggested, individual differences may affect behavior only when paired with situational conditions that induce stress (i. e., a stress diathesis or interaction model). This interaction hypothesis may be particularly appropriate for decision making in the military where decisions are time-bounded, costly in terms of personnel and material, and where decisions are often made under poor environmental conditions such as sleep deprivation, inclement weather, or based on less than perfect information.

I will be talking about various classes of individual differences. Within the general class of cognition, cognitive ability refers to individuals' capacity to process information and learn ([18] LePine 2003). Cognitive styles are chronic motivations that principally determine the initiation, course, and cessation of information seeking and processing (Thompson Naccarato, Parker, & Moskowitz, 2001). I will present five cognitive style variables: Personal Need for Structure (PNS), Personal Fear of Invalidity (PFI), Need for Cognition (NFC), and Conscientiousness and Openness to Experience; the latter two constructs from the 'Big Five' Model of Personality (McCrae & Costa, 1989). The affective class will include Neuroticism from the Big Five model. Finally the social class of variables will be represented by Extraversion, and Agreeableness, also from the Big Five. Although presented as discreet classes of individual differences, the research that I will summarize speaks to the fact that cognitive ability and cognitive style variables can affect the social aspects of teams, and can have emotional or motivational aspects. Similarly, motivational or affective individual differences can influence cognitive styles and social factors can have motivational and cognitive influences as well (see Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005).

Although I will review multiple individual difference variables and measures that might be anticipated to play a role in multinational coalition team effectiveness and adaptability, I am not providing an exhaustive list. Rather, they reflect the constructs that might play a role at different levels, constructs with which I am most familiar, and that are supported by a body of empirical work. For instance, since their introduction (Thompson, Naccarato, & Parker, 1989), the PNS and PFI 1 Scales have been the subject of 40 peer-reviewed empirical studies, have been independently validated (e.g., Neuberg & Newsom, 1993; Meiser & Machunsky, 2008), and have been translated into several different languages (e.g., Machunsky & Meiser, 2008; Monetta & Yip, 2004). Certainly the Need for Cognition (Cacioppo & Petty, 1982; Cacioppo, Petty, & Kao, 1984), needs little introduction or justification in this regard (see Cacioppo et al., 1996, for a comprehensive review of NFC research). Similarly, almost 20 years of research concerning the Big-Five Model of Personality (McCrae & Costa, 1989; Costa & McCrae, 2000), has consistently indicated the presence of five recurring and relatively independent personality dimensions (e.g. Borgatta, 1964; Digman, 1989; Digman & Takemoto-Chalk, 1981; Fiske, 1949; Goldberg 1990; John, 1990; Costa & McCrae, 1987; Norman, 1963; Peabody & Goldberg, 1989).

In cases where alternative measures exist, I have tried to select those measures which are the most concise yet retain their validity. For example, although the Need for Closure Scale (Webster & Kruglanski, 1994) measures cognitive style, it is much longer than the PNS and PFI measures. Indeed the Need for Closure 1 Scales uses many PNS and PFI items. More importantly, Neuberg, Judice, & West (1997) demonstrated that effects using the full Need for Closure scale were driven by the items in the PNS and PFI scale items (see also Neuberg, West, Judice, & Thompson, 1997; Monetta & Yip, 2004). A number of scales measure a wide range of personality dimensions (e.g., Block's California Adult Q-set, the NEO-FFI [Costa & McCrae, 1992; McCrae & Costa, 1990]). However, the Big Five Inventory (John, 1990; John, Donahue, and Kentle, 1991) provides a fairly complete and succinct assessment of the major components of personality with a minimum of effort and time, and again has a significant body of research associated with it (John & Srivastava, 1999). Just as importantly for the present concerns, the results of two meta-analyses support relationship between the Big Five Factors and job performance (Barrick & Mount, 1991; Tett, Jackson, & Rothstein, 1991).

2.0 Individual Differences in Cognition

2.1 Cognitive Ability

At the individual level cognitive ability has been shown to positively predict job performance (Robertson & Callinan, 1998), especially in jobs that involve mental representation and long-term memory (Hunter, 1986; Ree, Earles, & Teachout, 1994) and in tasks that are novel and complex (Hunter & Hunter, 1984). Le Pine and colleagues further demonstrated that higher cognitive ability was also associated with better decision making, prior to, and more importantly after unexpected change (LePine, et al., 2000).

In the team realm, higher levels of cognitive ability were associated with better team performance and emergent leadership behaviors (Kichuk & Wiesner, 1997; Kickul & Neuman, 2000, Mohammed & Angell, 2003). Most recently, LePine [18] (2003) explored the extent to which mean individual cognitive ability of team members would facilitate team-level adaptation after an unexpected team task context shift in an interdependent military command and control task simulation. He anticipated and found that teams that had high mean levels of cognitive ability were more adaptable. That is, they were more able to restructure their team configuration after an unexpected breakdown in communication and had higher performance levels after the reconfiguration of the team structure.

The thinking behind the role of higher cognitive ability and team functioning is that individual "members who have higher cognitive ability tend to be more effective in their roles, and *as long as the members are competent at integrating these roles* (italics added), their effectiveness translates to high team-level functioning" ([18] LePine 2003, p. 30). Yet, it is the integrating of the knowledge, skills, abilities and behaviors of different people that are critical to team effectiveness and we all know of instances in which intelligent, highly competent individuals come together, but are unable to form an effective team. Our anecdotal experiences are born out by research findings (e.g., Stewart, Fulmer, & Barrick, 2005). Indeed, the results of a recent meta-analysis revealed that team member mean cognitive ability was only moderately[1] associated with team performance (Devine & Phillips, 2001). Thus, we need to look closely at additional variables that might affect team level interaction and performance.

2.2 Cognitive Styles

Past studies have demonstrated that cognitive style, those individual differences that are hypothesized to directly affect knowledge seeking preferences and processes, have directly affected the timeliness and the manner in which decisions are made in a variety of domains (Thompson, et al., 2001). Indeed, research in social psychology confirms that cognitive styles affect knowledge-seeking/judgmental processes in important ways (e.g., Cacioppo, Petty, Feinstein, & Jarvis, 1996; Thompson, et al., 2001).

2.2.1 Personal Need for Structure

One cognitive style measure, termed the Personal Need for Structure (PNS), is designed to tap chronic levels of a preference for structure and clarity (Thompson, et al., 2001; see also Neuberg, Judice, & West, 1997; Neuberg & Newsom, 1993). Accordingly, a person high in PNS would prefer simplicity, precision, and structure in most situations, with ambiguity and grey areas proving troubling and uncomfortable. Individuals scoring high in PNS are more likely to organize both social and nonsocial information in simple, less complex ways (Neuberg & Newsom, 1993) and to dislike the more abstract forms depicted with modern art (Landau, Greenberg, Solomon, Pyszczynski, & Martens, 2006).

Studies have also shown that high PNS individuals are more likely to rely on their existing stereotypes of target individuals when the target individual's recent behavior was ambiguous or inconsistent with their prior history (Kaplan, Wanshula, & Zanna, 1991; Moskowitz, 1993; Neuberg & Newsom, 1993).

[1] (sample weighted mean r =.19)

Moreover, in one study individuals high in PNS showed high confidence in their assessments concerning a group, regardless of how much information they had received in order to make the judgment (Clow & Esses, 2005, Study 2). In addition, those high in PNS have been shown to fulfil commitments earlier, attesting to their characteristic response to time pressure (Neuberg & Newsom, 1993; Roman, Moskowitz, Stein, & Eisenberg, 1991). Interestingly, high PNS has also been related to susceptibility to the dilution effect, in which judgments are influenced by non-diagnostic information (Kemmelmeier, 2007).

In their psychometric work on the PNS scale, Neuberg and Newsom (1993) isolated two separate factors, which have been replicated in my work (Blais, Thompson, & Baranski, 2005; see also Hess, 2001). This first was termed the 'Desire for Structure' (DFS) which focuses upon individual's preference for situations, and activities that were structured and predictable. The second factor, 'The Response to a Lack of Structure' (RLS) taps anxiety and/or discomfort when structure was perceived to be missing from situations encountered. These distinctions have been informative in a deeper understanding of the Personal Need for Structure and related constructs. For instance, Bouckenhooghe, Vanderheyden,Van Laethem, & Mestdaugh (2007), found Neuberg and Newsom's two factor model in a study of cognitive style and reactions to intrapersonal decisional conflict[2]. Simple effects of multiple regression analyses indicated that a higher need for cognitive structure (akin to the Desire for Structure factor) was associated with less hypervigilance, (i.e., [less] elevated, unfocused and uncritical attention to details, including irrelevant details, often accompanied by ultimately impulsive decision making) and to less procrastination in response to decisional conflict. Lower decision confidence, (Decisiveness, akin to Neuberg and Newsom's Response to a Lack of Structure) was positively related hypervigilance[3] but was unrelated to procrastination.

In the social realm, higher levels of PNS were associated with higher in-group identification and favoritism, lower diversity beliefs, and more homogenous perceptions of both the ingroup and outgroup (Machunsky & Meiser, 2006), and to a belief that prejudice and discrimination are inevitable[4] (Hodson & Esses, 2005). Other work has shown that individuals with higher need for cognitive structure were less likely to turn the responsibility for decision making over to others (i.e., buck-passing, Bouckenhooghe et al., 2007). Conversely those who were high on decisiveness reported a greater likelihood of passing the buck, than those low on decisiveness. All of these results have important social implications for the PNS construct in multinational teams. Specifically addressing the social consequences associated with the construct, those high in a need for structure may have less ability to empathize with others or to be able to assume their point of view (see Webster & Kruglanski, 1997), pushing for early group consensus and rejecting dissidents within a group. They may be more likely to focus on quick resolution of tasks, ignoring importance of team work in favour of taskwork. This approach has been noted as detrimental to the success of multinational coalitions. "Consensus building, focusing mechanisms and "buy-in" techniques are all important to overall success … These skills and techniques often differ from the direct, aggressive, dominant styles …" (see 4. Forster, 2000, p. 58, see also 1 Scales, 1998; Skillett, 1993).

Other research has suggested that the negative affective responses inherent in prejudicial attitudes related to dissimilar others is associated with decreases on factors such as task performance, trust, and perceived fairness at the individual, team and organizational levels (Fujomoto, Hartel, & Panipucci, 2005). It is not too far a stretch to suggest then that individuals high in Personal Need for Structure may be more likely to quickly form negative initial impressions of dissimilar others, impeding their ability to contribute

[2] These researchers used the Need for Closure Scale. However, given that Neuberg and Newsom's 2 factor structure was apparent in these results and that the Need for Closure scale effects have been shown to be driven by items from the PNS (and PFI) scale, exploration of this pattern of results would seem to be useful and legitimate.

[3] Bouckenhooghe et al. (2007) define hypervigilance as involving essentially two components: unfocused attention to all detail, including irrelevant detail, and also "… a sense of urgency and emotional excitement and search for immediate relief" (p. 609). Thus the somewhat counterintuitive result that individuals high in Decisiveness also engage in hypervigilance in response to decision conflict may be driven by this second aspect of hypervigilance.

[4] unexpectedly PNS was not related to prejudiced attitudes in this study.

constructively and adaptively in multinational coalitions. Similarly, the associations between buck-passing, procrastination and hypervigilance and high PNS (Bouckenhooghe et al., 2007) could easily have important ramifications for team interactions.

2.2.2 Personal Fear of Invalidity

Some individuals may react to decision-making situations by being more concerned with the possibility of making errors, or a higher fear of invalidity, and this may affect their decision-making strategies in significant ways. For example, a heightened concern with error can lead to vacillation between options, a condition which is associated with longer response latencies and lessened subjective judgmental confidence (Kruglanski & Freund, 1983). It is also expected that those high in PFI would show less confidence in the decisions that they make, have longer response latencies, and be more vulnerable or receptive to the effects of contradictory information (Thompson et al., 2001), replicating the effects previously obtained with situational inductions of fear of invalidity (via evaluation apprehension).

A personality measure that taps chronic concerns with error, termed Personal Fear of Invalidity (PFI) (Thompson, et al., 2001) has been demonstrated to relate to more conflicted attitudes, regarding social issues (Thompson & Zanna, 1995; Thompson, Zanna, & Griffin, 1995), higher ambivalence, and lower action orientation in a decision scenario (Hänze, 2002), as well as to a tendency to procrastinate in completing university assignments (Somers & Lefcourt, 1992).

In terms of interpersonal judgements, high PFI has also been associated with a greater information seeking prior to making a judgment about a group of people, with the development of more detailed judgments when this information was sought, and with less confidence in their judgment when more information was sought (Clow & Esses, 2005). This tendency may well be positive in a group setting, suggesting that such individuals may be less likely to act based on stereotypes, or to form impressions of others quickly, without sufficient information. However, to this I would add that the hesitation, doubt and reticence to commit to any decision at all associated with a high fear of invalidity could certainly impact on team functioning, and effectiveness, either due to the lack of a decision in teams that are homogonous with respect to high PFI or due to increased conflict in heterogeneous groups in which individuals high in PFI are combined with personality styles that are prone to making quick decisions.

2.2.3 Need for Cognition (NFC)

"… [I]ndividuals low in need for cognition and individuals high in need for cognition must make sense of their world, but tend to derive meaning, adopt positions, and solve problems by somewhat different means" (Cacioppo Petty, Feinstein and Jarvis, 1996, p. 198). More specifically, those individuals with a high need for cognition enjoy and even seek out effortful cognitive tasks and consider such tasks as challenging rather than stressful encounters (Cacioppo & Petty, 1982; Cacioppo, Petty & Kao, 1984). High need for cognition motivates people to search for a meaningful synthesis of decision-relevant information, with a goal of reconciling apparent inconsistencies into a meaningful and overarching understanding of a problem or issue. Past research has determined that, relative to low NFC, high NFC is related to a focus on information and source quality when making decisions (Cacioppo, Petty & Morris, 1983); to better performance on traditional cognitive tasks (Cacioppo et al., 1996), complex skill acquisition (Day, Espejo, Kowolik, Boatman, & McEntire, 2007), more efficient information processing (Levin, Huneke, & Jasper, 2000), shorter response times, at least when the tasks are personally relevant (Mueller, Haupt, & Grove, 1988), less chronic procrastination (Ferrari, 1992; see also Bouckenhooge et al., 2007), and to decisiveness (Curseu, 2006). Those high in NFC also perceive themselves to be effective problem solvers (Heppner, Reeder, & Larson, 1983), have higher levels of curiosity (Olson, Camp, & Fuller, 1984), and they generate more complex explanations of behavior (i.e., attributional complexity) (Fletcher, Danilovics, Fernandez, Peterson, & Reeder, 1986; see also Sargent, 2004).

This link with cognitive complexity is important because there is evidence to suggest that such individuals are more able to reconcile apparently contradictory information (Rosenbach, Crockett & Wapner, 1973; Press, Crockett, & Delia, 1975; Rosenkrantz & Crockett, 1965). Consistent with this thinking, individuals with higher levels of Need for Cognition are less likely to utilize hypervigilance and procrastination as decisional coping styles (Boukenhooghe et al., 2007; see also Berzonsky & Sullivan, 1992). Taken together, this literature suggests that those high in NFC typically endeavor to work through, understand, and bring coherence to a decision area. With respect to adaptability per se however, at least one study found that NFC was unrelated to functional flexibility, that is, the ability to perform behaviors that are appropriate to particular situations (Miller, Omens & Delvadia, 1991).

Most recently, Need for Cognition has also been shown to be associated with a variety of outcomes which have implications for team processes and outcomes. For instance, a recent study by Kearney, Gebert, & Voelpel (2008) has shown that team diversity with respect to age and education levels was associated with greater elaboration of task relevant information, higher collective team identification, and better performance only when mean team level of NFC was high. In terms of affect and interpersonal outcomes, higher NFC is associated with lower scores on state and trait anxiety measures (Olson Camp & Fuller, 1984), and more adaptive responses to fear inducing communications (Ruiter, Verplanken, De Cremer, & Kok, 2004). Higher NFC is also related to lower communication apprehension (Wycoff, 1992), lower social anxiety, higher levels of self-monitoring (Cacioppo et al., 1996) a tendency to look toward other for standards of behavior, rather than oneself (Crowley & Hoyer, 1989) and less 'buck-passing' (Boukenhooghe et al., 2007).

2.2.4 Conscientiousness

Of the Big Five factors, Conscientiousness most relates to a cognitive style in that it refers to such traits as thoroughness, persistence, predictability, and dependability versus carelessness, absent-mindedness, forgetfulness and erraticness (McCrae & Costa, 1989). Conscientiousness has also been associated with achievement striving, self-discipline, orderliness, dutifulness, deliberation, and commitment ([18] LePine 2003), and has also been shown to be related to higher levels of job performance in different work areas (Barrick & Mount, 1991). It has also been related to higher levels of compliance, and altruism (Robertson & Callinan, 1998). Consequently, LePine et al. (2000) anticipated a positive relationship between Conscientiousness and individual adaptability, hypothesizing that the careful attention to detail would enhance effectiveness in new situations. Unexpectedly however, Conscientiousness was negatively related to adaptability; closer examination revealed that it was the orderliness and predictability, rather than the achievement and competence aspects of Conscientiousness that were responsible for this effect.

In terms of its effect on team behaviors and performance, higher average team conscientiousness has been associated with higher performance (Neuman, Wagner, & Christiansen, 1999), and more specifically that performance was best under conditions in which a team leader and team members were all high in conscientiousness (LePine, Hollenbeck, Ilgen, & Hedlund, 1997). Other work has suggested that there may be additional interpersonal effects related to Conscientiousness as well. For example, team members who were high in Conscientiousness were the most discriminating when it came to recognizing requirements and legitimacy to come to another member's assistance in a team task (Porter, Hollenbeck, Ilgen, West, & Moon, 2003). That is, team members high in Conscientiousness, who were 'back-up' recipients were able to obtain the both the most assistance when required and the least back up when it was not required. Conscientiousness has also been linked to positive team task roles and goals focused on problem-solving and task completion (Stewart et al., 2005, see also Kickul & Neuman, 2000). However, LePine's (2003) [18] work on team level adaptation suggested that it was lower levels of Conscientiousness, at least on the orderliness and predictability dimensions of the construct, that were associated with higher level of team adaptation to change.

2.2.5 Openness to Experience

Openness to Experience, another Big Five Factor, includes tendencies to be intellectually complex, imaginative, insightful, original, curious, and studious (vs. dull, illogical and narrow-minded) (Costa & McCrae, 1992), and thus could also be reasonably interpreted to be a cognitive style. Individuals high in Openness to Experience have been found to enjoy novel situations and cognitive activities (King, Walker & Broyles, 1996; Costa & McCrae, 1992). Openness to Experience is expected to relate to better job performance (Neuman et al., 1999; [18] LePine 2003), and similarly has been associated with higher levels of training proficiency (Barrick & Mount, 1991). Moreover, LePine and colleagues (2000) found that openness to experience facilitated individual level adaptability in the face of changing task context.

There has been much less research that has explored the relation of Openness to Experience with respect to team and interpersonal realms. However, higher levels have been associated with emergent leadership behaviors (Kickul & Neuman, 2000). LePine [18] also found a positive effect of team level openness to experience on the team's adaptation to changing tasks contexts. Still the benefits of Openness to Experience may not always be apparent in teams. For instance, it was unexpectedly negatively related to problem solving and task-oriented behaviors and to assuming the roles within a group that involve cooperation, conflict resolution, cohesion building and maintenance (Stewart et al. 2005).

3.0 Individual Differences in Affect

3.1 Neuroticism

Neuroticism refers to one's emotional resilience, calmness, stability, confidence, and independence versus one's tendency to be anxious, fearful, sensitive, and self-critical (McCrae & Costa, 1989. There is a wealth of literature supporting the hypothesis that individuals higher in neuroticism tend to fare poorly in the face of stress (e.g., Gallagher, 1996; Kling, Ryff, & Love, 2003; Rolland & DeFruyt, 2003; Wayne, Musisca, & Fleeson, 2004). Neuroticism is also associated with lower levels of well-being (Ebert, Tucker, & Roth, 2002), happiness, and life satisfaction (Hayes & Joseph, 2003). A recent meta-analysis also indicated that neuroticism is negatively associated with job satisfaction (Judge, Heller, & Mount, 2002). In their work, [13] Ployhart & Bliese (2006) posit that higher Neuroticism would be associated with the crisis and work stress and uncertainty subdimensions of individual adaptability.

Neuroticism has also been shown to have several effects in the interpersonal realm. For instance, it negatively affects perceptions of similarity of others, at least in familiar contexts and this effect was explained to be related to the heightened sensitivities to threat that underlie Neuroticism (Moss, Garivaldis, & Toukhsati, 2006). In the team literature lower levels of Neuroticism (i.e., higher levels of emotional stability) were also related to more successful performance in product development teams (Kichuk & Weisner, 1997), more task focused goals and roles within a team (Barrick, Stewart, & Piotrowski, 2002; Stewart, Fulmer, & Barrick, 2005), higher levels of group social cohesion (van Vianen, De Drue, & Carsten, 2001), as well as lower levels of conflict in teams (Trimmer, Domino, & Blanton, 2002).

4.0 Individual Differences in Sociability

4.1 Extraversion

Extraversion of the Big Five Model of Personality (Costa & McCrae, 1987; 2000) explicitly addresses social and interpersonal dimensions that might be expected to affect team performance. Extraversion includes interpersonally based traits such as sociability, assertiveness, dominance, and the tendency to be outgoing versus reserved, aloof, shy, and solemn. On the surface, these traits suggest a higher ability and tendency to interact and communicate which should lead to increases in team effectiveness. And indeed

this relationship has been found in some studies (e.g., de Jong, Bouhuys, & Barnhoorn, 1999; Kichuk & Weisner, 1997; van Vianen, et al., 2001). Higher levels of team member Extraversion have also been related to team attraction, emergent leadership behaviors in teams (Kickul & Neuman, 2000), job satisfaction (Robertson & Callinan, 1998), as well as to positive evaluations of transformational leadership among followers (Felfe & Schyns, 2006). Moreover, higher levels of Extraversion were also related to the provision of back-up behaviors when required in a team decision making task ([4] Porter, et al., 2002).

However, upon closer reflection, this combination of sociability and dominance can lead to different effects on team processes and outcomes. Specifically, it has been demonstrated that Extraversion can be associated with status seeking within a group (Barrick et al., 2002; Lucas, Diener, Grob, Suh, & Shao, 2000); thus while higher Extraversion may be associated with some of the tasks of social interaction, it is not always associated with altruistic helping behaviors in teams (Stewart et al., 2005). Nor is it always beneficial in other ways (Barry & Stewart, 1997): higher levels of Extroversion have also been related to lower peer-ratings of task-related and problem solving activities by work team peers (Stewart et al., 2005).

4.2 Agreeableness

Agreeableness is also an interpersonal in nature and includes tendencies to be tolerant, cooperative, and warm versus malicious, harsh, irritable, and insincere (McCrae & Costa, 1989). Of the Big Five Factors, there has been less research that sought to address the impact of Agreeableness. However, higher average team level Agreeableness has been shown to be related to team higher performance (Neuman et al., 1999). More successful product development teams tended to be characterized by higher group levels of Agreeableness (Kichuk & Weisner, 1997). Higher levels of Agreeableness have also been associated with higher peer ratings of cooperation and equalitarian behaviors within graduate management student teams (Stewart et al., 2005). As well, in one study, the crews of aircraft commanders who were high in agreeableness tended to make fewer errors (Chidester et al., 1991). In general, however, the results of a (Barrick and Mount's, 1991) meta-analysis suggested that to date, Agreeableness is not generally associated with predictors of team performance. Still, Agreeableness may be more important in team and especially leadership situations that require particularly high levels of consideration and interpersonal skill (Taggar, Hackett, & Saha, 1999), as is the case in a multinational coalition (4. Forster, 2000; 1 Scales, 1998; Skillett, 1993).

5.0 APPLICATION TO MILITARY SAMPLES

The vast majority of the research discussed here has been conducted on university samples, and business and organizational teams. Thus a very relevant question is to what extent are these individual differences be applicable to military teams? A very limited number of published research articles have explored these effects of these individual differences on military samples; luckily, there is some evidence justifying the assumption that these measures might be relevant to military teams. For instance, the results of previous study undertaken specifically to determine the generalizability of these 1 Scales to military samples (Thompson, 1998), indicated that the cognitive styles of a sample of 355 Canadian Forces personnel corresponded with those obtained from university samples with the officer sample more similar to the university sample than the sample drawn from the non-commissioned ranks.

Further, Halfhill, Nielsen, Sundstrom, & Weilbaecher (2005) have looked at the relationship between the Conscientiousness and Agreeableness of 422 United States Air National Guard personnel who were members of small teams (3-14 members) and supervisor rated team performance. Results showed that group ratings of Agreeableness and Conscientiousness both correlated with team performance ratings. An additional study assessed the cultural adjustment of 31 international officers at three and seven-month points in their year long posting to the United States. While admittedly a very small sample size, results showed that while none of the Big 5 dimensions were related to psychological adjustment at three months,

at seven months into their tour psychological adjustment was negatively correlated with neuroticism and positively correlated with openness to experience (Schahresad, Forman, & Zachar, 2001). As well, Kobbeltvedt, Brun, & Laberg (2005) found that sleep deprived military cadets who scored higher on Need for Cognition developed better rescue mission plans that cadets who were lower NFC. In summary then, although the literature is scant, it does appear that it is reasonable to utilize many of these individual difference measures in studies of military personnel. Nonetheless it is always advisable to conduct initial psychometric and descriptive tests to confirm this as a standard part of analyses of research in this area.

6.0 CALCULATION OF TEAM PERSONALITY COMPOSITION

The above review from quite a varied literature generally suggests that various individual differences do play a role in team processes and outcomes. However, there are some differences, and indeed contradictions in the findings. One of the reasons for these differences is associated with the manner in which team personality composition is calculated. Far and away the most commonly used index is the average level of team composition on a variable: the thinking here is that the overall team level will either benefit or hinder the team's effectiveness (Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005). Here teams that are generally high on say cognitive ability will outperform those low on cognitive ability; teams high on Neuroticism will fare more poorly than those low on Neuroticism.

Another position suggests that positive or negative effects are expected to be associated with a team's diversity with respect to individual differences. This is assessed via the variability, usually the variance or standard deviation, of the team's composition on measures of interest. It is hypothesized that in some instances homogeneity on particular variables facilitates team performance because similarity on attributes mean that team members will be compatible with each other (Neuman, Wagner & Christiansen, 1999). In other instances, heterogeneity will be more beneficial, because diversity will mean that members will complement each other in ways that will facilitate team performance (Neuman et al., 1999). Still other theorists have suggested that greater diversity on some traits and homogeneity on other traits will be associated with better team performance (Neuman et al., 1999).

A third approach is to explore the effects of the most extreme score of one member on team outcomes. This general approach includes studies that explore the effects of the highest or lowest team member on an individual difference relative to team outcomes. The idea here is that certain individuals will significantly influence the team's outcomes, presumably more than will the influence of the rest of the team members on that variable (Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005). A further novel approach to extreme scores and group variability, adopted by Stewart, Fulmer, & Barrick, (2005), is to measure group skewness, operationalized as the variability between the highest (or lowest member) and average of the remaining group members (i.e., when one member is low and the rest of the team are high on a factor)[5].

Not surprisingly, these various calculations, and the underlying rationales that drive them, have understandably contributed to the varying and sometimes conflicting results in the literature on team personality composition and team performance. For instance, variability in team member cognitive ability, rather than average team level or lowest or highest team member cognitive ability, was found to be related to the quality of ideas generated and the overall team performance of automobile production teams (O'Connell, Doverspike, Cober, & Philips, 2001).

For those contemplating future research studies in this area, two meta-analyses have specifically addressed the issue of how team personality composition was calculated. Halfhill, Sundstrom, Lahner, Calderone, & Nielsen (2005) reviewed 31 empirical team studies conducted over the past 30 years, concluding that the mean, minimum and variance operationalizations of team personality composition produced the strongest

[5] Although they applied this calculation to the notion of individual's roles within teams, such an approach would also be readily amenable to the notion of team personality composition.

associations with team outcomes. With respect to cognitive ability, a meta-analysis revealed that only the team average (and not team dispersion) was moderately related to performance (Devine & Phillips, 2001). Similarly, the results of a meta-analysis of the literature exploring the relationship between Big Five factors and team performance (Peeters, Van Tuijl, Rutte, & Reymen, 2006) indicated that neither variability in nor mean level of Extraversion was related to team performance. Higher mean team levels of Agreeableness or Conscientiousness were related to increased team performance, while variability in the Agreeableness or the Conscientiousness of team members was related to lower team performance. Finally, across studies, neither mean level of, nor variability in, teams levels of Openness to Experience or Neuroticism were related to team performance. These findings remind us of the importance of consideration of the calculation of indices for researchers entering into the fray of this research area. It would be prudent to at least employ a variety of calculations in research in this area, or more preferably to determine the most appropriate calculation method based upon theoretical or conceptual considerations.

7.0 MEDIATORS AND MODERATORS OF THE TEAM PERSONALITY COMPOSITION AND TEAM EFFECTIVENESS RELATION

The variations in the findings of proceeding review reveals that simple main effects of personality on team performance remain elusive. This suggests the presence of moderator or mediating variables in the personality-team performance relation. Although it is beyond the scope of this paper to enumerate all the possible mediators and moderators of the team personality – team outcome relation, a couple of important ones seem relevant to mention.

7.1 Motivational Factors

Motivational factors may well influence the personality-team performance relation. For instance, the Collective Effort Model (CEM, Karau & Williams, 1993) suggest that members will be particularly likely to maintain high levels of individual effort and contributions to overall good team performance under certain conditions. First, there must be the potential for the identification or evaluation potential of their individual outputs in the task and second, some perceived uniqueness must be associated with their personal contributions. Third, there must exist relevant performance standards for the comparison of their performance. Fourth, the task must be perceived as being profitable or rewarding either for extrinsic or intrinsic reasons. According to this model then, there is a lower probability that individuals will reduce their contributions and effort in team settings (i.e., process loss, Steiner, 1972) where these conditions exist. In fact, according to CEM, process gains and the likelihood of compensatory behaviors where possible to make up for shortfalls of others are more likely to occur when these conditions are present (see Baranski, Thompson, Lichacz, McCann, Gil, Pastó, & Pigeau, 2007). The conditions which define the CEM may be an important moderator of the effects of individual differences in that all members will work to their highest potential when these team task conditions are salient, and importantly, are consistent with their individual level goals.

Similarly, higher identification with a team could well be a motivator leading to greater levels of commitment to valued team goals, team cohesiveness, and persistence in the face of adversity, and thus facilitate team interaction and performance, even in the face of diversity in terms of the personality composition of the group (Piero, Cicero, Bonaiuto, van Knippenberg, & Kruglanski, 2007). As promising a thought as this is, this may be especially hard to achieve in a multinational coalition in that the identities of militaries are often inextricably linked to national identity (Elron, Shamir, & Ben-Ari, 1999).

7.2 Effective Leadership/Team Membership

It goes without saying that much rests on the shoulders of the leaders. Indeed, two popular beliefs concerning leadership are that leaders have a larger influence on team performance that does the actions of

subordinates and that team failures are largely attributable to ineffective leadership. In their 1994 American Psychologist article, Hogan, Curphy, & Hogan discuss the interpersonal essence of team leadership: "Leadership is persuasion, not domination … leadership only occurs when others willingly adopt, for a period of time, the goals of the group as their own. Thus, leadership concerns building cohesive and goal oriented teams; there is a causal and definitional link between leadership and team performance" (p. 493).

Hogan et al (1994) reviewed a variety of leadership research pointing to the personality characteristics of effective leaders. They were able to reduce a wide literature into the characteristics associated with the Big Five. They concluded that higher levels of Extraversion, Agreeableness, Conscientiousness, and Emotional Stability (i.e., low Neuroticism) were associated with effective team performance. For instance, the finding that air crew commanders who were warm, self-confident, and able to deal with stress more effectively (i.e., higher Agreeableness and low Neuroticism) had crews who made fewer less severe flying errors certainly underscores the role of leader personality in team performance.

Zaccaro, Rittman, & Marks (2001) proposed that effective leadership will influence four fundamental team processes. First, effective leaders will promote a shared understanding of the team's mission, of the tasks required to achieve the mission and the role requirements of each member, fostering collective information processing, encouraging members to identify, diagnose problems, and to generate and select optimal solutions. Second, leaders also influence important motivational team processes by setting high performance goals. A third important leadership function is to moderate the degree of affect by setting the tone for voicing and dealing with disagreements and conflict constructively, and modelling these behaviors in response to conflict in their own interactions with team members. Fourth, leaders influence the coordination activities of teams by identifying and combining the skills and abilities of members that most likely will result in task effectiveness and efficiency. In sum then, effective leaders are important purveyors of intent, openness, persuasion and influence in teams. They model important team abilities and processes and develop underlying individual and team capabilities, essentially encouraging and guiding the team members to be increasingly self-managing, while leaders retain their role as 'boundary spanners' between the team and the outside environment and demands. Effective leaders will re-emerge in more directive roles when the environment gets more complex or in an emergency situation.

Of course, effective leadership will not change team member's absolute level of cognitive ability, cognitive styles or indeed any of the affective or social individual differences outlines here. But it is clear that effective leadership will go a long way toward setting the stage, providing constructive feedback, modelling appropriate team and task work behaviors and attitudes and can therefore inspire members to contribute their best efforts and to try out other new attitudes and behaviors that will facilitate effective team performance in a multinational coalition context. Leadership can form one of the important factors acknowledged to interact with the chronic tendencies inherent in individual differences. As just one example, strong positive leadership might exhort individuals high in need for structure to be more open to novel ideas and less rejecting of diversity. Skilled leadership may also provide links between individual member goals and valued individual outcomes with valued team outcomes as outlined by the CEM and would likely play an important role in fostering team identification in this context.

Leaders are not the only important influence here. Rather effective team performance is usually a reflection of a reciprocal relationship between leaders and their teams ([6] Zaccaro, Rittman, & Marks, 2001). Certainly empirical research demonstrated that team effectiveness is often due to a combination of high abilities, skills and traits of leaders and teams (e.g., LePine, Hollenbeck, Ilgen, & Hedlund, 1997). Similarly, other work has demonstrated that team performance is enhanced when perceptions of both leader-role and staff-role efficacy were high (Taggar & Seijits, 2003; see also Taggar, Hackett, & Saha, 1999). And all of these studies have concluded that the effects of positive leadership can be significantly undermined by staff deficiencies, and vice versa. Overall then, leaders and team members, perhaps especially those who are senior or emergent leaders, can set the team cognitive, affective and social norms

and thus create the motivational surround to harness the positive aspects and moderate the potential dilatory effects of individual differences on team performance and effectiveness.

7.3 Task type

Task type, that is the demands of particular jobs, has also been suggested as a moderator of the individual difference – performance relation (e.g., Robertson & Callinan, 1998; Stewart, et al., 2005; see also [13] Ployhart & Bliese, 2006). There is some research that supports this contention. For instance, while Conscientiousness has been shown to generally relate to better performance across jobs, Extraversion has been found to be an asset in jobs that require especially high interpersonal skill such as sales and managerial jobs (Barrick & Mount (1991). Other research also found that at least some personality dimensions interacted with task type in predicting team performance. Anderson (2006) found that the relationship of three of the Big 5 factors to team performance was moderated by task type. Higher team Conscientiousness was related to better performance on tasks that were characterized as Realistic, Enterprising and Conventional, greater team Agreeableness was related to higher performance levels on Realistic and Social Tasks, and Team Openness was related to better performance in tasks characterized as Investigative, although the effect for task type was not fully supported in other recent work (English, Griffith & Steelman, 2004). Mohammed & Angell (2003) too found that task type influenced the personality-team effectiveness relation in that that higher levels of variability on team agreeableness and neuroticism was associated with lower scores on oral tasks, while higher levels of variability in Extraversion was related to better performance on oral tasks. Finally, higher mean team level cognitive ability was associated with better performance on written reports.

7.4 Team Roles

The team roles required to be assumed by individuals also influence the effects of individual differences. Stewart, et al. (2005) proposed such a model in which the individual difference-team outcome relation which is affected by team roles. While acknowledging the important role that individual level variables such as traits influence the roles that individuals generally prefer to assume, the actual roles assumed within a team are also a feature of situational demands required of the team task. Individual and situational demands combine into team level role configurations, those task (i.e., fact gathering, information processing, problem solving) and team roles (i.e., cooperation, coordination), that are influenced by the situation and by interaction with the other team members that then affect team outcomes (e.g., efficiency, effectiveness and cohesion).

Accordingly, individuals high in Conscientiousness might normally gravitate toward the structuring the problem solving and decision making aspects of a task, while individuals high in openness to experience might drawn to the idea generation, and problem definition. However, within a team setting the situational constraints may impel these same individuals to take on other roles within the team in order to facilitate productivity and harmony, or to assume more of the problem solving aspects of the team task, at least to some extent if no other team member naturally assumes these roles.

7.5 Situational Variables

Situational variables such as time pressure or level of urgency (i.e., importance) of the situation may also play a role moderating the individual difference – team performance relation. However, the direction of the effect of situational variables is not necessarily unidirectional. One the one hand, situational factors that increase the stress associated with emergencies or time pressure result in a range of perceptual and cognitive distortions and a general narrowing of focus, often compelling individuals to fall back on preferred styles or overlearned behaviors (Driskell & Salas, 1996). In these cases then, we might expect these situational factors to potentiate the effects of the individual differences outlined here. Those high in PFI would become even more concerned with the possibility of error; those high the Desire for Structure

would prefer even greater clarity in information, etc. On the other hand, these situational factors might, at times, provide a moderating effect, lessening the effects of these individual differences. The effects in these situations may reflect a more complex dynamic however. Perhaps individual differences will be more apparent in urgent situations that have more integral team or task work elements. It also may be the case that the effects of individual differences might not be as apparent in the short run in an urgent situation – people may be able to set aside their differences, to some extent – although the ability to do some will likely be enhanced by other variables cited earlier such as effective leadership and motivational factors. These are but a few potential moderators or mediators of the personality-team performance relation. The take home point is that researchers interested in the issue of coalition teamwork may wish to take findings such a these, and indeed others into consideration when making predictions concerning coalition teams.

8.0 FINAL THOUGHTS AND FUTURE DIRECTIONS

In general, the results of the research that I have summarized, and tried to integrate here suggest that individual differences do play a role in team performance. Cognitive ability, cognitive styles and, the Big Five dimensions may play major roles. For all that we do know about the individual difference-performance relation, however, there are no easy answers. More specifically, the answer to the question of whether individual differences play a role in team performance is 'It depends'. What we measure, how we measure it, who is measured, and the tasks being performed, as well as other factors at play in team contexts are all important pieces of this puzzle.

Indeed, there remain a number of critical questions for researchers pursuing individual differences in team performance, especially in the complex terrain of multinational coalition teamwork. For instance, to what extent are individual differences in personality associated with cultural differences? That is, will individual differences be subsumed within cultural differences or will they remain potent sources of team and task performance in the multinational coalition team setting? Which individual differences are critical to military coalition team effectiveness? Is it diversity among or mean levels of these measures that are most important to note in military coalitions? Are there particular coalition team tasks that will be most vulnerable to the individual difference effects, while other tasks may remain relatively immune to the potential deleterious effects? Which are the critical mediating and moderating factors facilitate or impede the positive aspects of individual differences in multinational collation teams? Which leader and team member actions will be most effective in setting the stage for effective multinational coalitions, or for addressing mission and team issues that arise once a coalition is formed? And also, critically in this context which individual differences are most and least associated with cultural adaptation and sensitivity? Finally, what are the tools that we can provide to multination teams and their commanders to facilitate the efficiency, effectiveness of multinational coalitions?

Some work has already begun to address these questions. Concerning the effects of individual versus cultural differences, on the one hand the research conducted on sojourners to other countries continues to suggest that even *within* cultural groups there are consistent individual differences that facilitate integration and interaction with diverse populations [15; 16] Hannigan, 1990; see also Ward & Kennedy, 1994. On the other hand, Sutton, Cosenzo, & Pierce (2004) found reliable differences in preference for mental abstractions and for uncertainty, novelty and change across three culture groups represented in SFOR Support and Stability staff officers in Bosnia-Herzegovina. This is a fundamental question to be addressed because it will inform whether attempts at awareness, education, and training in this regard should be directed at the level of individual versus cultural difference. That is, should differences be seen, understood, and therefore addressed on a person by person basis, or is a group level understanding is most appropriate to facilitating effective multinational teamwork? Multilevel modelling techniques might be ideal to determine the concerning the extent to which individual differences remain potent sources of team and task performance in the multinational coalition team setting.

Regarding the question of the individual differences that are most and least associated with cultural adaptation and sensitivity, the work from organizational and cross-cultural psychology is already informative. And I have tried to make the connections between the literature reviewed here and the notion of how individual differences affect teamwork in general and, by extension, multinational coalitions, as well. In general, those individual differences reflecting emotional and social openness, cognitive complexity, and cooperation should be associated with better team and taskwork outcomes. Those individual differences that are associated with the tendency toward restrictive categorizations and a competitive orientation should be associated with poorer team and task outcomes. These differences should be evident in most team settings; the additional complexity of multinational coalitions should exacerbate these effects.

The complexity of the results associated with this research literature reminds us to consider the viability and validity of more nuanced approaches where informative of team processes and outcomes. For instance the two-factor approach to the Personal Need for Structure (Neuberg & Newsom, 1993; Thompson et al., 2001) as well as that which LePine and colleagues (e.g., [18] LePine 2003; LePine et al., 2000) applied to Conscientiousness, are certainly intriguing, and patterns that are evident in other research. Indeed these more complex models may well inform our understanding of studies that have produced seemingly anomalous results (e.g., Bouckenhooghe et al., 2007; Clow & Esees, 2005).

As mentioned in the introduction the list of individual differences reviewed here is not exhaustive. Other constructs such as individual differences in trust (Thompson, Adams, & Satori, 2007), goal orientation (DeShon & Gillespie, 2005), psychological collectivism (Jackson, Colquitt, Wesson, & Zapata-Phelan, 2006) and cross-cultural adaptability (Kelley & Myers, 1996) may be relevant potential candidates for future research concerning the individual difference – multinational coalition team performance relation. To date however, research involving these measures in this context is particularly new, limited or suggests that the current available measures require revision.

We also need to continue to integrate research efforts in this area within the contexts of rigorous models of team performance. That is there are a growing number of empirical findings in this area but it lacks an overall systematic coherence. For instance, several authors have explored the notion of the impact of task type on the individual differences - performance relation. And while they often refer to and outline Steiner's (1972/1976) additive (i.e., all members perform the same task and group productivity is the sum of members actions, and is usually the quantity produced, e.g., brainstorming), conjunctive (i.e., performance is contingent on the abilities, skill and output of the lowest performing member), disjunctive (i.e., performance is dictated by the outputs of the best performing member, e.g., problem solving where there is one correct answer), and discretionary (i.e., the individual has control over the way in which they contribute to the team task) types. Other research only identifies the one or two task types that happen to exist within their particular investigation. The other approach is to apply Steiner's typology to calculations of team measures (e.g., calculate mean, variance team score and/or a team individual difference score based on the highest or lowest scoring member) and then report the performance scores associated with each calculation. While all are informative to some extent, the end result is somewhat of a muddle.

Other models that directly address the individual-team performance relation are also relevant to pursue in this regard. Stewart et al.'s (2005) model in which the individual difference-team outcome relation is mediated by team roles and situational factors is but one such example. DeShon and colleagues (DeShon, Kozlowski, Schmidt, Milner, & Wiechmann, 2004) developed a multilevel process model that takes into account both goal discrepancies and feedback at the individual and team levels and its effects on the regulation of individual and team behaviors. Individuals and team goals and feedback loops are separate in this model. Where discrepancies occur the two levels compete for control of the individual's behavior. Discrepancies in each level are monitored and behavioral changes and allocation of resources are based on these. Such models are intriguing in that they explicitly outline a place for individual differences and develop models which acknowledge the roles of individual and team level factors, thereby providing some

basis for exploration of differential effects when these different levels of the model are consistent or discrepant. To date these models have aspects that require further articulation and empirical support, but do provide solid ways ahead for future research. Indeed, the adventurous multinational coalition researcher might take on the somewhat daunting task of adding a culture level to these models, thereby determining the relevant contribution of each of these levels to multinational coalition team performance.

Further research might also pursue the relationship of personality to individual and team adaptability specifically. Ployhart & Bliese [13] predicted that cognitive ability would be related to the creativity and problem-solving subdimensions of their individual adaptability model, with Neuroticism relating to the crisis, work-related stress, and uncertainty adaptability subdimensions, and Extroversion being most associated with the interpersonal and cultural subdimensions of individual adaptability. Although Openness to Experience, Agreeableness and Conscientiousness are included in their I-ADAPT model, explicit predictions concerning their relation to the adaptability subdimensions are not enumerated. Still, it may be that Openness to Experience might be most associated with creativity, uncertainty and learning, with some likely relation to cultural adaptability as well. Agreeableness would seem to have its closest association with interpersonal and cultural adaptability, and Conscientiousness with the uncertainty and learning dimensions.

It also seems plausible that the remaining individual difference variables I have discussed are also applicable to the I-ADAPT model ([13] Ployhart & Bliese, 2006). For instance, one might anticipate that the Desire for Structure factor of the Personal Need for Structure would be most related to the learning, uncertainty, and creativity subdimensions, while the Response to the lack of Structure factor would be most related to the crisis, work stress, and uncertainty subdimensions, of Overall Adaptability. However, the relationship between higher PNS and stereotyping might also suggest a relationship to the interpersonal and cultural adaptability subdimensions as well. One might expect that higher levels of PFI might be most associated with the crisis, work stress, creativity, and learning subdimensions, however, Clow and Esses (2005) work also suggest that some relationship may exist with respect to the interpersonal subdimension as well.

The studies that I have summarized have utilized a variety of methodologies: university students versus professionals, laboratory versus applied settings. The strength of this body of work is that there is some consideration of the generalizability of findings beyond the typical first year university samples. But it is also clear that it has produced a wide variety of findings as well. One important point to consider as you integrate all of this work and determine whether individual differences are important to pursue is that a systematic review of the team literature revealed that the effects of team personality on team performance has been stronger in field than in laboratory studies (Halfhill, Sundstrom, Lahner, Calderone, & Nielsen, 2005). The good news from this work is that we might expect these effects to be most apparent in professional, applied settings (e.g., Kearney et al., 2008), such as those of coalition teams.

Obtaining valid and relevant answers to the questions and issues raised above highlights the need for an integrated, coordinated program of research to guide implementation. While we all know that scientific results are based on probabilities, and that replication of empirical results is imperative, it is also the case that some of our administrative, political and military masters may not understand this idea. I realize that at the end of the day implementation decisions is beyond the purview of the scientific communities. Nonetheless, these points perhaps should be clearly made in our presentations of results to non-scientific audiences whose enthusiasm and action-orientation may cause them to seize upon a single study's results. While occasionally there are empirical results of such clarity and import that it would be unethical not to implement, we in the research community know that this is not the norm.

If a program of research indicates the continuing importance of individual differences, then efforts must be made to reduce the number of items to the minimum necessary for valid research for training and selection. I well recall one of my first forays into military survey research. Used to dealing with

introductory psychology students I happily and very naively compiled a lengthy survey questionnaire, only to be provided, well let's just say, quite direct non-verbal feedback by a participant as he left the room. It was a somewhat startling but necessary lesson in applied psychology – and perhaps particularly in military settings. Not only does it alienate participants, at the end of the day we researchers end up with less than accurate data. This was an extremely important lesson learned for me, one that I have tried to politely pass on to the newly arrived researchers at DRDC Toronto (sometimes to no avail), and one which perhaps this experienced audience knows all too well, but nonetheless I think can never be mentioned too often.

If particular individual differences are associated with better outcomes for teams, what is the best way for this information to be used? The simple answer of course would be to select people based on the characteristics we would like to see and exclude those who do not possess such traits. However, most countries are similar to Canada in that they simply do not have the luxury of numbers of people to draw from to sustain a selection-based approach to tackling this question. Thus, we would need to conduct a program of basic research to establish the extent to which the positive aspects of these individual differences can be cultivated and how the less beneficial aspects can be modified. This basic understanding would then need to be translated into effective training for military contexts. This is not a trivial concern or task. We must always approach the issue of cultural differences very carefully. Given the natural human tendency to categorize (Moskowitz, 1993), we must be clear that education and training programs concerning differences do not inadvertently foster negative stereotypes which will ultimately harm multinational teamwork, especially among people who are higher on those individual differences most associated with spontaneous categorization, stereotyping and prejudice.

Although we may not have the luxury of selecting team members, who we choose to command multinational coalitions is extremely important, and likely to be a matter of deliberate selection. Identifying those characteristics most associated with effective leadership in multinational coalitions should be a key focus of research. And indeed, here is where individual difference research may provide particular benefit. Past notable successes provide important clues in this regard as to the characteristics required for successful leadership in multinational coalitions. And luckily many examples exist, for instance General Eisenhower in World War II. Although using validated and rigorous selection for coalition commanders may be feasible in some regards, research should also be directed to answering the question of the extent to which training will enhance leadership in the multinational coalition context.

Certainly one way to enhance multinational coalition teamwork would be training to address the notion of cultural adaptability ([17] Sutton, Pierce, Burke, & Salas, 2006). Cultural adaptability is comprised of three components. Cultural competence is the awareness that aspects of thought and behavior have a basis in culture. Teamwork is the ability to communicate information and intentions and to coordinate actions effectively in any team setting. That is, the important underpinnings of generic teamwork abilities and skills should be transferable to a multinational setting. And finally, adaptability is the knowledge ability and behavioral repertoire to modify own behavior as necessary when working with another culture, along with the explicit choice to adapt own behaviors as needed to ensure overall team effectiveness. Although there are certainly attempts made during multinational exercises to expose people to different cultures, speaking perhaps to the awareness component of cultural adaptability, it is not clear that the notion of cultural adaptability is embedded as a goal in any of this training; indeed there is recent evidence that there is a lack of training in this regard (Sutton & Pierce, 2003). While it is clear that some people will naturally understand the importance of intercultural adaptability, not all people will. As well, without careful attention to this dynamic opportunities for cultural adaptation can quickly become experiences that instil or deepen negative cultural stereotypes, thus undermining future coalition effectiveness. Based on the research reviewed here it would seem likely that individuals high on Personal Need for Structure might be especially vulnerable to negative stereotypes within this kind of setting. It would be interesting to develop a prototype training program aimed at cultural adaptability and determine its value added potential in the context of multinational coalitions. Sutton and colleagues ([17] Sutton, Pierce, Burke, & Salas, 2006;

Sutton & Pierce, 2003) have already begun work in this area. It would then be interesting to determine its effectiveness in influencing the stereotypes of those individuals whose predispositions would suggest that they are most in need of this training.

Speaking to the question of tools for commanders, [2] Bechtold (1995) articulated the novel proposal that coalition commanders estimate should include reference to multinational group dynamics. This would specifically address coalition cohesion factors, as well as the potential divisive points that might affect the stability and focus of the coalition. This would include those issues that might affect unity of effort, force interoperability and risk to multinational forces. Another approach is the use of teams of well-trained liaison officers that would allow the commander to share his or her intent more clearly and allow direct feed back to the commander on a regular basis on the understanding of and cohesion among subordinate or parallel forces in the theatre of operations ([4; 1] Forster, 2000; Scales, 1998).

At higher levels of command recent structural innovations might also be adopted in future. For instance, the Coalition, Coordination, Communication and Integration Center (C3IC) was used to great effect in Operations Desert Shield and Storm. The Center did not have command authority but was created specifically to facilitate coordination and information sharing and liaison arrangements. There was a focus on unity of effort rather than the traditional unity of command (Rice 1997). It is critical to note, however, that in the end, the Center itself was not the key to success here. The personnel that staffed the C3IC were selected to understand and communicate with personnel from a different culture (Center for Army Lessons Learned, 1992). Moreover:

> [t]he C3IC succeeded most of all because of the proper personalities – co-directors Major General Paul R. Schwartz for the United States and Major General Salah al Garza for Saudi Arabia – made it work. General Schwartz has acknowledged the specific pains required "to demonstrate the coalition" by a visible and vital personal relationship within the C3IC. The relationship, however, was not limited to the co-directors. It was expected, indeed, demanded at all C3IC levels (Skillett, 1993, p. 4).

The C3IC then, was a direct and deliberate extension of personality and embodied the interpersonal sensitivities necessary for optimal effectiveness in multinational settings. As this example demonstrates administrative structures, technology and control mechanisms will only facilitate, and never replace, the human element in operations. And it may well be that personality will continue to play a role in the attitudes, behaviors, and interpersonal skills that will be required in coalition teams and indeed in all multinational mission contexts.

~ Joint Tactical Communications, CALL Newsletter 92-1, Ft. Leavenworth, KS: Center For Army Lessons Learned

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